REMARKS

The January 3, 2005 Office Action presented a restriction requirement, confirmed a provisional election to prosecute claims 1-6 and 13, and rejected claims 1-6 and 13. Applicant declines to amend the claims at this time. Reconsideration of the application is respectfully requested in view of the following remarks.

Election of Claims

Applicant affirms the provisional election of Group I (claims 1-6 and 13), and acknowledges the withdrawal of claims 7-12.

§103 Rejection

Claims 1-6 and 13 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Arnet et al., U.S. Pat. No. 6,643,149 (hereinafter "Arnet") in view of Kea et al., U.S. Pat. No. 6,337,804 (hereinafter "Kea"). Applicant respectfully traverses this rejection.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation to modify a reference or to combine the teachings of multiple references. Second, there must be a reasonable expectation of success. Third, the prior art must teach or suggest all of the recited claim limitations. Of course, the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in Applicant's disclosure. Applicant respectfully submits that the Examiner has not met all of the above criteria.

Arnet generally discloses a switching system for a voltage source inverter ("VSI"). Arnet discloses a controller that adjusts the duty cycle of the pulse width modulation ("PWM") control signals, however, this "duty cycle" (δ) is defined as "the percentage of time the VSI is not in a zero state" (Column 4, Lines 59-65; emphasis added), where a "zero state" represents one of the two switching conditions corresponding to the zero vectors (Column 4, Lines 37-39). As alluded to in the Office Action, Arnet does not disclose the sensing of a low output frequency condition, determining a zero vector modulation, or applying the zero vector modulation.

Kea generally discloses a VSI that utilizes four switches in each branch rather than only two as disclosed by Arnet. The Kea system is specifically intended to maintain a uniform (i.e., fixed) duty cycle for all four switches in each branch, namely, a duty cycle of 50% (Column 4,

Lines 12-14). The Office Action contends that Kea discloses the recited technique "for sensing low output frequency and zero state switching state" at Column 2, Lines 5-35. This passage, however, does not teach or suggest the claimed subject matter.

Applicant submits that one skilled in the art would not be motivated to combine the teachings of Arnet and Kea as proposed by the Office Action. Arnet, for example, contains no suggestion or motivation that would lead one to make the proposed modification. In this regard, any duty cycle adjustments made by the Arnet controller are, by definition, associated with non zero state conditions and, therefore, do not involve zero vector modulation in any way. In addition, Applicant questions whether one skilled in the art would be motivated to combine the two-switch-per-branch architecture of Arnet with the four-switch-per-branch architecture of Kea. Furthermore, Kea is limited to a system having a uniform or fixed switching duty cycle and, therefore, the Kea technique would not be appropriate for use in connection with the claimed method, which requires the determination of a specific zero vector modulation in response to the current sensed output frequency condition. In other words, the Kea system uses a predetermined duty cycle (50%) that is not responsive to any changing conditions. Consequently, one skilled in the art would not be motivated to utilize a fixed duty cycle technique (as taught by Kea) to arrive at the claimed invention. Furthermore, one skilled in the art would not be motivated to utilize the Arnet system, which disregards zero vector states when adjusting switching duty cycles.

Even assuming, *arguendo*, that the proposed combination of Arnet and Kea is reasonable, the combination does not teach or suggest each and every claim limitation. Regarding independent claim 1, for example, the proposed combination does not teach or suggest the determination of a zero vector modulation responsive to the sensed low output frequency condition. Rather, the proposed combination would establish a uniform duty cycle for all switching conditions, and by design that uniform duty cycle would not be responsive to any sensed condition.

For at least the above reasons, claims 1-6 and 13 are not unpatentable over Arnet in view of Kea, and Applicant respectfully requests withdrawal of the §103 rejections of those claims.

Conclusion

In conclusion, for the reasons given above, all claims now presently in the application are believed allowable. Should the Examiner have any questions or wish to further discuss this application, he is requested to contact the undersigned.

If for some reason Applicant has not requested a sufficient extension and/or has not paid a sufficient fee for this response and/or for the extension necessary to prevent abandonment on this application, please consider this as a request for an extension for the required time period and/or authorization to charge Deposit Account No. 07-0960 for any fee which may be due.

Respectfully submitted,

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